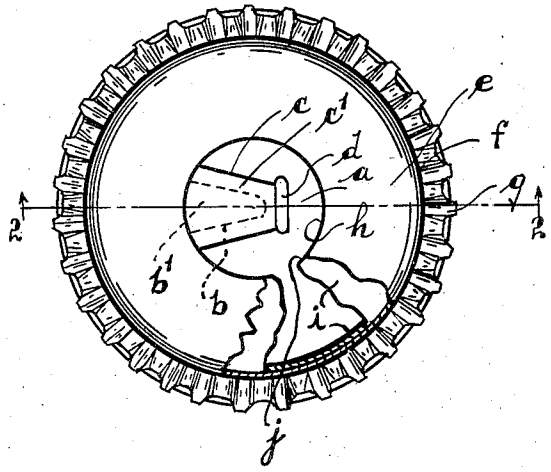
June 7, 1932. A. H. WARTH 1,861,590

BOTTLE CLOSURE

Filed Oct. 8, 1930

Fig. 1.



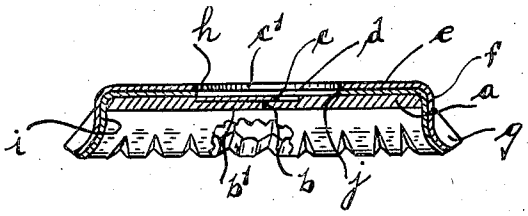
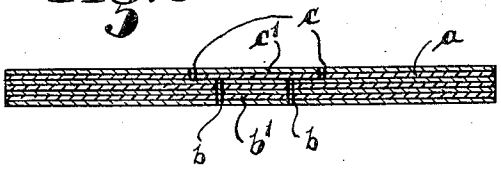


Fig. 2

Fig. 3.



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Patented June 7, 1932

1,861,590

UNITED STATES PATENT OFFICE

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BOTTLE CLOSURE

Application filed October 8, 1930. Serial No. 487,097.

The invention relates to bottle closures and more particularly to a closure adapted to be used for sealing bottles containing fluids not under pressure, such as milk.

A bottle closure embodying the invention is so constructed as to include a fibrous disc which is firmly held in position upon a bottle by a closure member having therein an opening through which a portion only of the disc is exposed, the exposed portion being so formed as to permit the formation of an opening through the disc suitable for the insertion of a tube by which the contents of the bottle may be withdrawn without possibility of displacement of the disc and without requiring the removal of the closure as a whole. The fibrous disc is utilized to form an effective packing about the top of the neck of the bottle, a metal shell having a fluted skirt being utilized not only to develop the desired pressure upon the disc to produce an effective seal, but to firmly hold this disc in position upon the bottle at all times. The metal shell is provided with a central opening of dimensions capable of exposing a portion of the sealing disc adequate to permit an opening to be manually made without the aid of tools.

In the closure of the invention, I preferably provide the metal shell with a lining of fibrous material which has been so treated as to not only assist in retaining the sealing disc in the shell prior to its application to a bottle, but which will facilitate the application of the metal shell and its contained disc to a bottle and assist in forming an effective seal about the side of the locking bead upon the bottle.

The sealing disc is so treated as to resist the action of the liquid contents of a bottle thereon, the lining for the metal shell not being required to be so treated since it is protected from contact with the contents of the bottle by said disc.

Primarily, the closure of the invention is designed for use in the bottling of milk to be sold under conditions where the milk is to be immediately consumed, such as lunch rooms of schools, and other places, soda bars, etc. where it is desired to avoid the use of drinking glasses because of the unsanitary conditions arising from such use.

The closure of the invention is so constructed and applied to a bottle as to avoid any possibility of such a displacement of the closure disc as would result in the splashing or spilling of the contents of a bottle.

The invention consists primarily in a bottle closure embodying therein a disc of fibrous material of substantially the same diameter as the top of the neck of a bottle, and a metal shell having an opening therethrough exposing a portion of said disc, and means whereby said shell may be held upon a bottle; and in such other novel features of construction and combination of parts as are hereinafter set forth and described and more particularly pointed out in the claims hereto appended.

Referring to the drawing,

Fig. 1 is a top view of a closure embodying the invention, portions thereof broken away;

Fig. 2 is a section on the line 2—2 of Fig. 1; and

Fig. 3 is a detail view of the closure disc removed from the shell upon an enlarged scale.

Like letters refer to like parts throughout the several views.

In the embodiment of the invention shown in the drawing, I employ a disc *a* of multiple ply fibrous material, such as paper or cardboard stock, the diameter of this disc being approximately equal to the greatest diameter of the bottle adjacent the neck thereof so as to cause the edge of the disc to seat upon and form a seal against the top of the pouring lip of the bottle. On the under side of this disc, I produce a weakened line defining the formation of a flap, the weakened portion being in the form of a cut extending through a plurality of plies of the fibrous material. This line is shown at *b* and the flap defined thereby is indicated at *b'*.

Upon the opposite face of the disc, or the top thereof, I also provide a weakened line defining a tab, the width and length of which is relatively greater than that of the flap *b'*. This weakened line on the top of the disc

is shown at c and the tab defined thereby is shown at c'. By making the dimensions and area of the tab c' greater than those of the flap b', the continuity of the body of the disc is not completely interrupted so that until it is desired to have access to the bottle the disc affords a continuous effective barrier against the escape of the contents of a bottle, irrespective of its position.

Upon the upper face of the disc adjacent the weakened line defining the end of the tab c', I remove one or more plies of the fibrous material so as to facilitate the formation of the tab and its separation from the flap when it is desired to have access to the bottle. This cutaway portion is indicated at d.

The fibrous disc is applied to and held in position upon the neck of a bottle by means of a metal shell having a top e and a skirt having a cylindrical portion f with an outwardly flared and fluted lower edge g. This shell has an opening therethrough, through which the tab c' is exposed exteriorly of the closure. This opening is indicated at h.

It will be noted that the shell e, when applying the closure to a bottle, develops a sealing pressure upon the disc a about and against the top of the bottle against which is bears, and that so long as the shell is held upon the bottle by the engagement of the fluted portion g of the skirt beneath the locking bead about the neck of the bottle, there is no possibility of any movement of the disc a either inwardly or outwardly of the bottle or in relation to the shell.

It is preferable to provide the metal shell with a lining i of fibrous material which, except for an opening j therein registering with the opening h covers the entire inner surface of the shell including the top portion e, and cylindrical and fluted portions g of the skirt.

The lining i is preferably of fibrous material, such as paper stock which in the production of the cap may be cemented in any desired manner upon one face of the tin sheet from which the shells are formed, thus permitting the simultaneous formation of the shell and its lining. This lining prevents any possibility of the contact of the contents of the bottle with the metal of the shell. It also affords a seal about the edge of the locking bead of the bottle supplementing the seal secured by means of the disc a, and also affords points of yieldable contact between the flutes of the skirt g and the locking bead of the bottle which will, in a measure, compensate for slight variances in the diameter of the beads of different bottles.

The disc a is of substantially the same diameter as the cylindrical portion f of the metal shell, and the edge of this disc frictionally engages the lining i about this cylindrical portion. If desired, the disc a may be cemented to the lining for the top e of the metal shell, although ordinarily this is not necessary. It may in some instances be desirable.

Since the cap is applied to bottles by means of a capping machine, it is desirable that a disc a be firmly positioned within each shell from the time of the production of the closure until it is applied to a bottle. Under ordinary circumstances the frictional engagement of the disc a with the lining i in the manner above referred to, ensures a retention of the disc within the shell. The use of adhesive, however, in cementing the disc to the lining will obviate any possibility of the accidental separation of these parts.

A closure is applied to a bottle filled with milk or other non-effervescent liquid by an ordinary capping machine which will develop a pressure upon the top e of the metal shell through the lining i and disc a against the top of the pouring lip of the bottle. The capping mechanism is also provided with a throat which by engagement with the fluted portion g of the skirt will deform the skirt so as to draw the cylindrical portion f tightly about the locking bead of the bottle and force the inwardly directed fluted portions beneath the locking bead in a manner to hold the compression of the disc a and the lining i and retain the closure in position upon the bottle.

When the closure is applied to a bottle the opening h in the top e of the shell is closely adjacent the top surface of the disc a and exposes the weakened line c defining the tab c'.

Upon leaving the capping machine, fibers of the tab portion c' will be interlocked with fibers of the flap b' so as to present a continuous barrier across the mouth of a bottle.

The disc a may be treated with paraffin or other material to cause it to resist the action of the milk or other liquid in the bottle.

When it is desired to dispense the contents of a bottle, the party serving same, either with a fingernail or with a knife or other instrument, engages the edge of the plies through which the weakened line c extends, and by an upward pull separates these plies from the plies through which the weakened portion b extends so that it is merely necessary to push the flap b' downwardly and insert a straw or other tube through the opening thus formed. The tab c' is not used to facilitate the removal of the disc a from the bottle, since this disc is firmly held in position by the metal shell so that displacement thereof is impossible.

The consumer withdraws the contents of the bottle through the straw or other tube, and the then empty bottle is returned to the bottler with the closure still in position thereon.

A closure embodying the invention is not

suitable for use in connection with bottles used for household distribution, but provides a highly sanitary seal for a bottle used in the dispensing of liquids.

The disc *a*, when applying the closure, is positioned within the shell and is subjected to compression about the edge thereof for the purpose of forming an effective seal against the top of the pouring lip of the bottle. This compression avoids any possibility of the disc *a* being forced within the neck of a bottle or being withdrawn from its engaging relation with the neck of the bottle. The opening *h* is provided in order to expose the disc through the metal shell for the purpose of permitting the formation of an opening through this disc to permit access to the contents of the bottle in the manner above described.

Having described the invention, what I claim as new and desire to have protected by Letters Patent, is:—

1. A bottle closure embodying therein a disc of fibrous material of substantially the same diameter as the top of the neck of a bottle, a metal shell having an opening therethrough exposing a portion of said disc, and means whereby said shell may be held upon a bottle, and a fibrous lining cemented to the portion of said shell about said opening and to the means holding said shell upon the bottle and having an opening therethrough registering with the opening in said shell.

2. A bottle closure embodying therein a disc of a plurality of plies of fibrous material of substantially the same diameter as the top of the neck of a bottle, and a metal shell having an opening therethrough exposing a portion of said disc, and means whereby said shell may be held upon a bottle, plies upon one side of said disc being cut through to define a movable flap and plies upon the opposite side of said disc cut through to define a tab of a larger area than said flap, said flap and said tab being in the exposed portion of said disc.

3. A bottle closure embodying therein a disc of a plurality of plies of fibrous material of substantially the same diameter as the top of the neck of a bottle, a metal shell having an opening therethrough exposing a portion of said disc, and means whereby said shell may be held upon a bottle, and a fibrous lining cemented to the portion of said shell about said opening and to the means holding said shell upon the bottle and having an opening therethrough registering with the opening in said shell, plies upon one side of said disc being cut through to define a movable flap and plies upon the opposite sides of said disc being cut through to define a tab of a larger area than said flap, said flap and said tab being in the exposed portion of said disc.

4. A bottle closure embodying therein a disc of a plurality of plies of fibrous material of substantially the same diameter as the top of the neck of a bottle, a metal shell having an opening therethrough exposing a portion of said disc, and a skirt having a cylindrical portion and a fluted edge adapted to be crimped beneath the locking bead of a bottle to hold the shell thereon, and a fibrous lining cemented to the portion of said shell about said opening and to said skirt and having an opening therethrough registering with the opening in said shell, plies upon one side of said disc being cut through to define a movable flap and plies upon the opposite sides being cut through to define a tab of a larger area than said flap, said flap and said tab being in the exposed portion of said disc.

In witness whereof I have hereunto affixed my signature this 3rd day of October, 1930.

ALBIN H. WARTH.